CLAIMS

What is claimed is:

1   1. A method of managing configuration information of a network
2   device, comprising:
3   at the network device, (1) maintaining running configuration
4   information of the network device, (2) changing the running
5   configuration information in response to (i) configuration change
6   requests received from a network management system at a first
7   interface and (ii) configuration change requests received from
8   outside the network management system at a second interface, and
9   (3) in response to receiving an upload configuration request from
10 the network management system, transferring a configuration file
11 containing the running configuration information to the network
12 management system; and
13   at the network management system, (1) maintaining a database
14 including configuration information for the network device, the
15 configuration information potentially being outdated due to the
16 configuration change requests received by the network device at
17 the second interface, and (2) under predetermined conditions,
18 (i) sending an upload configuration request to the network device
19 and subsequently receiving the configuration file from the network
20 device, and (ii) updating the configuration information in the
21 database using the contents of the configuration file.

1   2. A method according to claim 1, wherein the second interface
2   includes a command line software interface.

1   3. A method according to claim 2, wherein the second interface
2   includes a dial-up connection.

1   4. A method according to claim 1, wherein the configuration file
2   has an extensible format.

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1   5. A method according to claim 4, wherein the format of the

2   configuration file employs extensible markup language.

1   6. A method according to claim 1, wherein the network management

2   system includes a network management client communicatively

3   coupled to a network management server.

1   7. A method according to claim 1, wherein the network management

2   system includes a network management client communicatively

3   coupled to a network management server, and wherein the sending of

4   the upload configuration request and the updating of the

5   information in the database occur at the network management server

6   in response to the receipt of a synchronization request from the

7   network management client.

1   8. A method according to claim 7, further comprising sending an

2   update event from the network management server to the network

3   management client in response to the receipt of the

4   synchronization request, and responding to the update event at the

5   network management client by updating a user display to indicate

6   that a synchronization operation with respect to the network

7   device is in progress.

1   9. A method according to claim 7, further comprising sending a

2   refresh event from the network management server to the network

3   management client upon updating the information in the database,

4   and responding to the refresh event at the network management

5   client by updating a user display with updated configuration

6   information for the network device.

1   10. A method according to claim 7, further comprising sending a

2   status report from the network management server to the network

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3   management client upon receiving the configuration file from the

4   network device and updating the information in the database, the

5   status report indicating to the network management client that the

6   synchronization request has been successfully carried out.

1   11. A method according to claim 7, wherein the network management

2   client includes a graphical user interface, and wherein the

3   synchronization request is sent from the network management client

4   to the network management server in response to a user's

5   activation of a control object on the graphical user interface.

1   12. A method according to claim 11, wherein the control object

2   comprises a push button.

1   13. A method according to claim 11, wherein the control object

2   comprises a selectable menu item.

1   14. A method according to claim 7, wherein the sending of the

2   upload configuration request and the updating of the information

3   in the database also occur at the network management server in

4   response to the receipt of a trap message from the network device.

1   15. A method according to claim 14, wherein the trap message is

2   sent upon power-up of the network device.

1   16. A method according to claim 1, wherein the network device

2   includes functional features for supporting virtual routed

3   networks, and wherein the configuration information includes

4   information pertaining to at least one specific virtual routed

5   network supported by the network device.

1   17. A method according to claim 1, wherein the sending of the

2   upload configuration request and the updating of the information

.3   in the database occur in response to the receipt by the network

4   management system of a message from the network device.

1   18. A method according to claim 17, wherein the message from the

2   network device comprises a trap message.

1   19. A method according to claim 1, further comprising:

2   at the network device, saving the running configuration

3   information in response to save requests received from the network

4   management system; and

5   at the network management system, under predetermined

6   conditions, sending a save request to the network device.

1   20. A network, comprising:

2   a network device being operative (1) to maintain running

3   configuration information of the network device, (2) to change the

4   running configuration information in response to (i) configuration

5   change requests received at a first interface and

6   (ii) configuration change requests received at a second interface,

7   and (3) in response to receiving an upload configuration request

8   at the first interface, to transfer a configuration file

9   containing the running configuration information to the source of

10   the request via the first interface; and

11   a network management system coupled to the network device

12   via the first interface, the network management system being

13   operative (1) to maintain a database including configuration

14   information for the network device, the configuration information

15   potentially being outdated due to the configuration change

16   requests received by the network device at the second interface,

17   and (2) under predetermined conditions, (i) to send an upload

18   configuration request to the network device and to subsequently

19   receive the configuration file from the network device, and

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20   (ii) to update the configuration information in the database using
21   the contents of the configuration file.

1   21. A network according to claim 20, wherein the network device
2   provides a command line software interface at the second
3   interface.

1   22. A network according to claim 21, wherein the second interface
2   includes a dial-up connection.

1   23. A network according to claim 20, wherein the configuration
2   file has an extensible format.

1   24. A network according to claim 23, wherein the format of the
2   configuration file employs extensible markup language.

1   25. A network according to claim 20, wherein the network
2   management system includes a network management client
3   communicatively coupled to a network management server.

1   26. A network according to claim 20, wherein the network
2   management system includes a network management client
3   communicatively coupled to a network management server, and
4   wherein the sending of the upload configuration request and the
5   updating of the information in the database occur at the network
6   management server in response to the receipt of a synchronization
7   request from the network management client.

1   27. A network according to claim 26, wherein the network
2   management server is further operative to send an update event to
3   the network management client in response to the receipt of the
4   synchronization request, and wherein the network management client
5   is further operative to respond to the update event by updating a

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6   user display to indicate that a synchronization operation with

7   respect to the network device is in progress.

1   28. A network according to claim 26, wherein the network

2   management server is further operative to send a refresh event to

3   the network management client upon updating the information in the

4   database, and wherein the network management client is further

5   operative to respond to the refresh event by updating a user

6   display with updated configuration information for the network

7   device.

1   29. A network according to claim 26, wherein the network

2   management server is further operative to send a status report to

3   the network management client upon receiving the configuration

4   file from the network device and updating the information in the

5   database, the status report indicating to the network management

6   client that the synchronization request has been successfully

7   carried out.

1   30. A network according to claim 26, wherein the network

2   management client includes a graphical user interface, and wherein

3   the synchronization request is sent from the network management

4   client to the network management server in response to a user's

5   activation of a control object on the graphical user interface.

1   31. A network according to claim 30, wherein the control object

2   comprises a push button.

1   32. A network according to claim 30, wherein the control object

2   comprises a selectable menu item.

1   33. A network according to claim 26, wherein the network

2   management server is further operative to send the upload

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.3 configuration request and to update the information in the

4 database in response to the receipt of a trap message from the

5 network device.

1 34. A network according to claim 33, wherein the trap message is

2 sent upon power-up of the network device.

1 35. A network according to claim 20, wherein the network device

2 includes functional features for supporting virtual routed

3 networks, and wherein the configuration information includes

4 information pertaining to at least one specific virtual routed

5 network supported by the network device.

1 36. A network according to claim 20, wherein the network

2 management system is further operative to send the upload

3 configuration request and to update the information in the

4 database in response to the receipt of a message from the network

5 device.

1 37. A network according to claim 36, wherein the message from the

2 network device comprises a trap message.

1 38. A network according to claim 20, wherein:

2 the network device is further operative to save the running

3 configuration information in response to save requests received

4 from the network management system; and

5 the network management system is further operative to send a

6 save request to the network device under predetermined conditions.

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